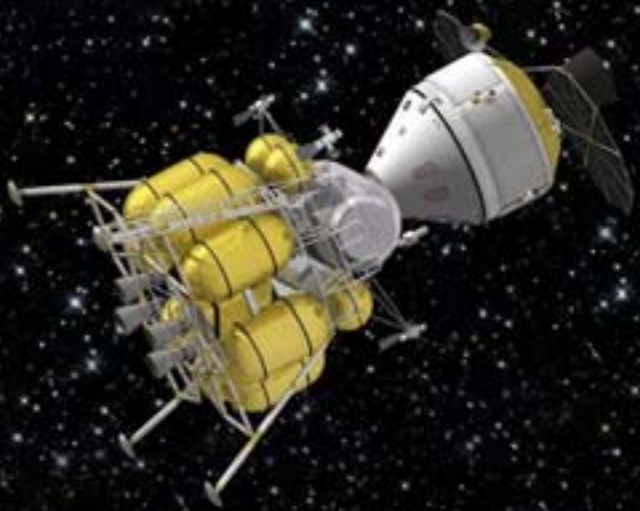
FIELD TRIP TO THE MOON

EDUCATOR'S GUIDE



Educational Product	
Educators	Grades 5–8

EG-2007-09-120-MSFC

NASA

American Museum of Natural History

Ares V Cargo Launch Vehicle

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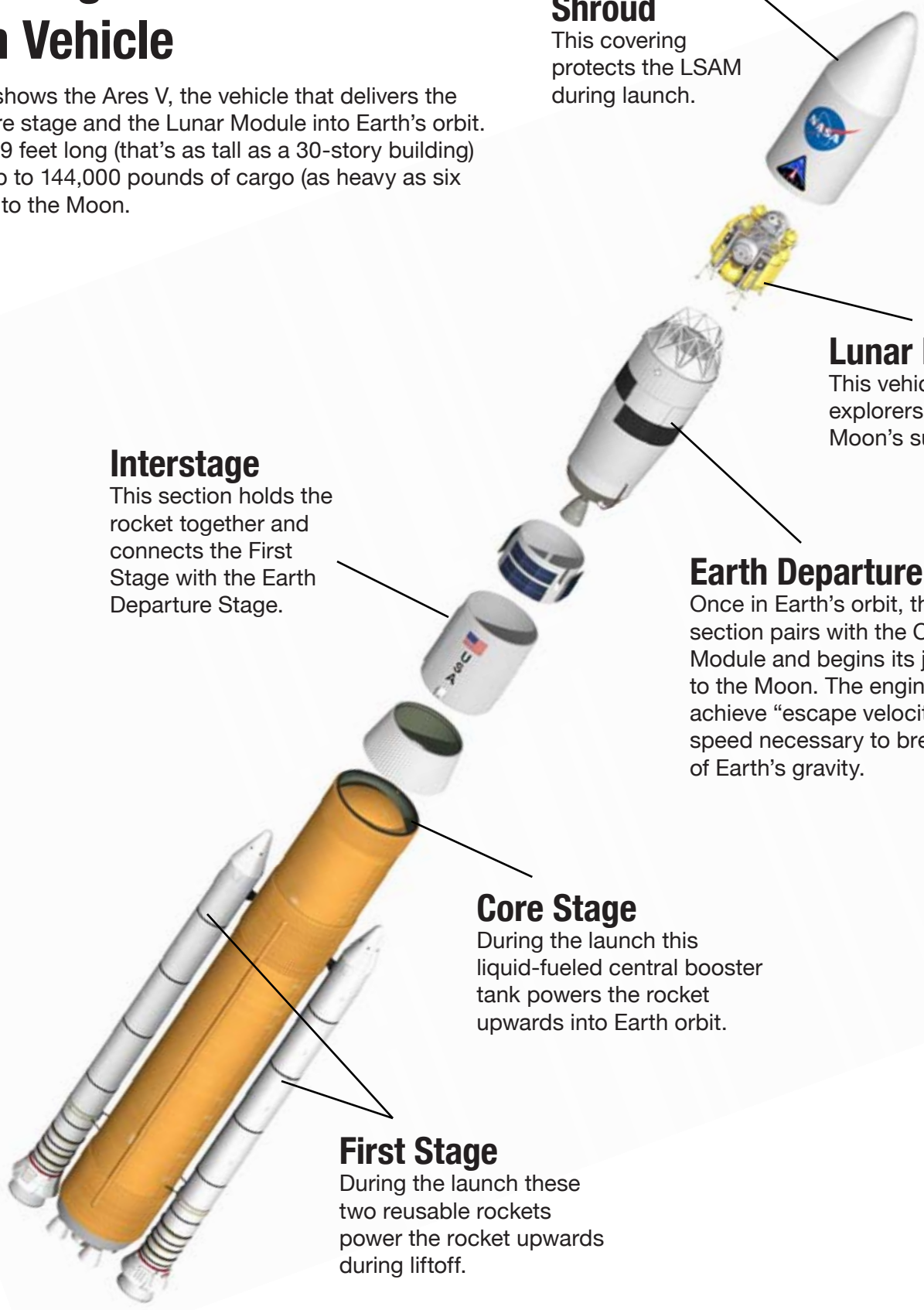

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This covering protects the LSAM during launch.

Lunar Module
This vehicle carries explorers to the Moon's surface.

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Once in Earth's orbit, this section pairs with the Crew Module and begins its journey to the Moon. The engine fires to achieve "escape velocity," the speed necessary to break free of Earth's gravity.

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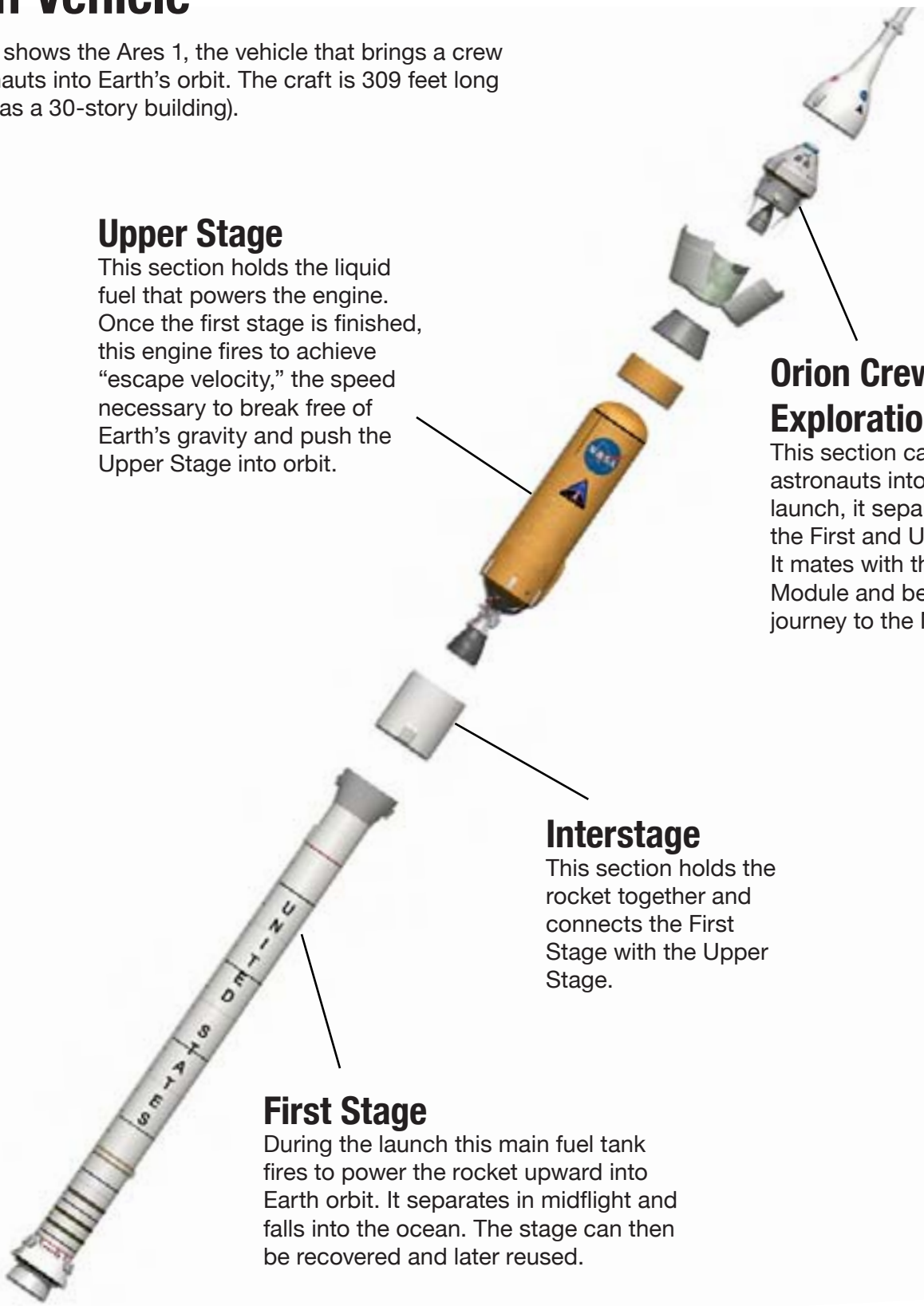

Upper Stage

This section holds the liquid fuel that powers the engine. Once the first stage is finished, this engine fires to achieve "escape velocity," the speed necessary to break free of Earth's gravity and push the Upper Stage into orbit.

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During the launch this main fuel tank fires to power the rocket upward into Earth orbit. It separates in midflight and falls into the ocean. The stage can then be recovered and later reused.

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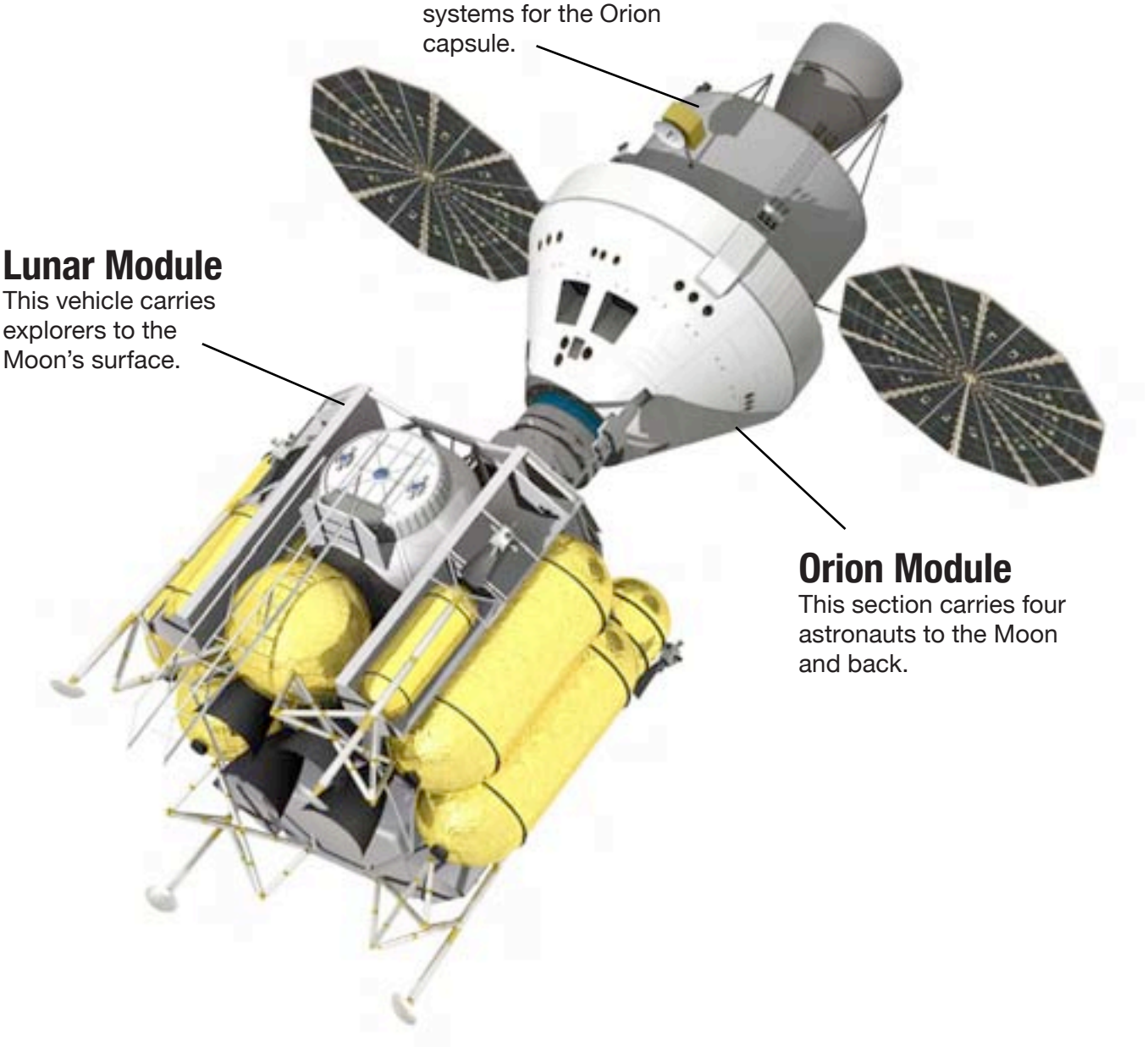

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PRIORITY	TYPE OF CARGO	% PACKED CARGO
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	Supplies Examples: space suits, clothing, medical supplies, toiletries	
	Life Support Examples: oxygen, water, air filters, water purification system	
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		TOTAL %

Food Cargo

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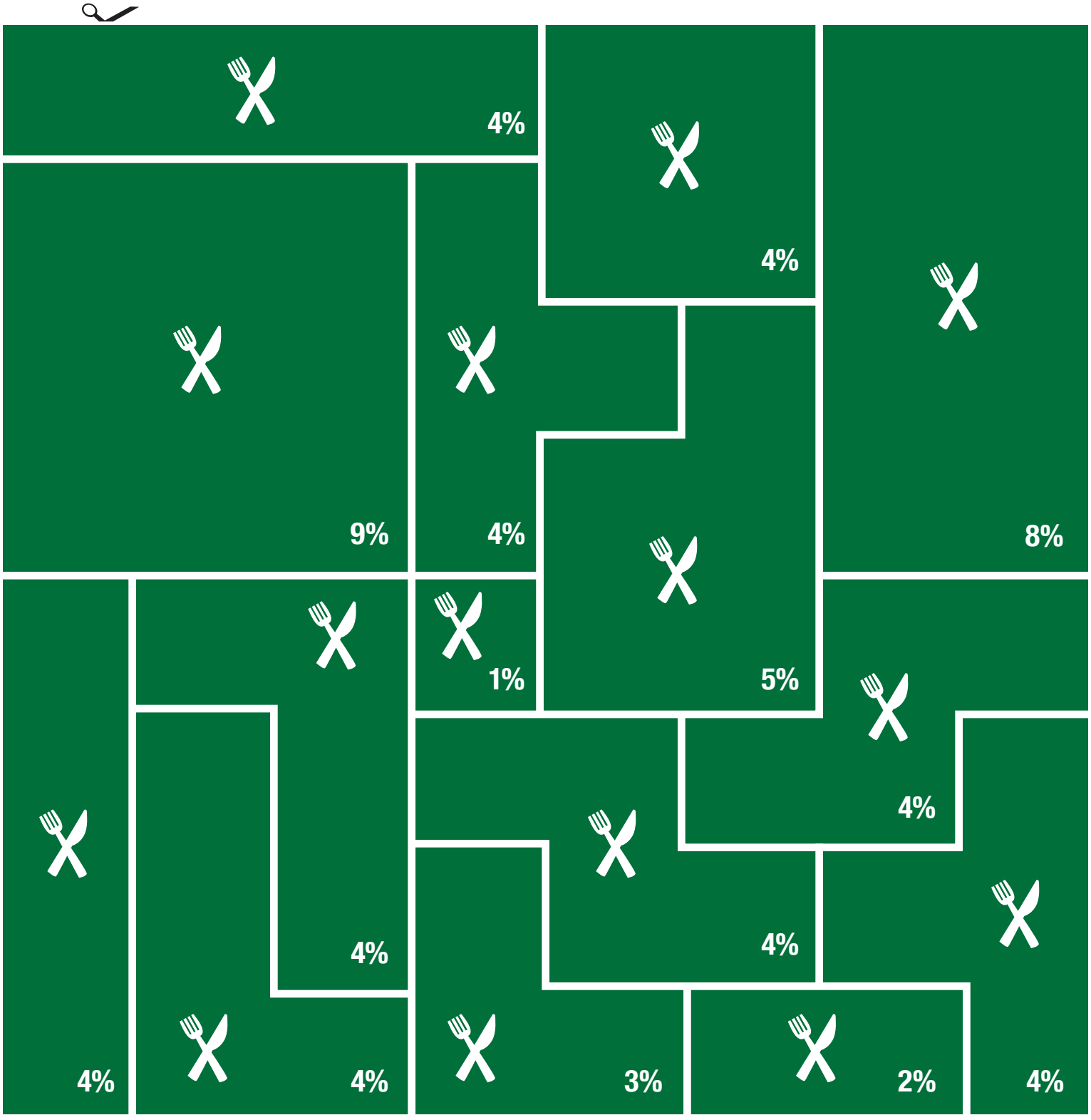

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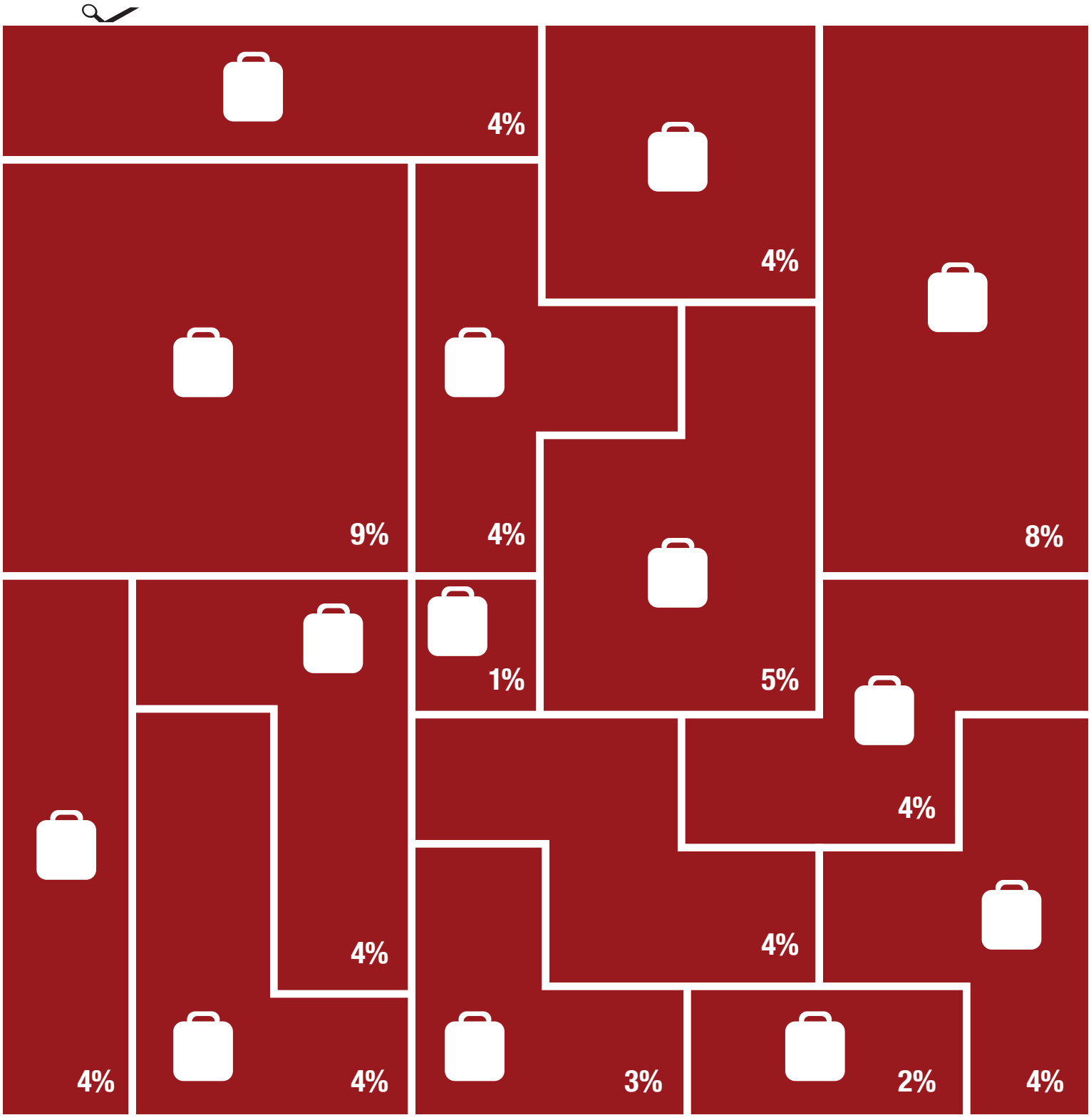

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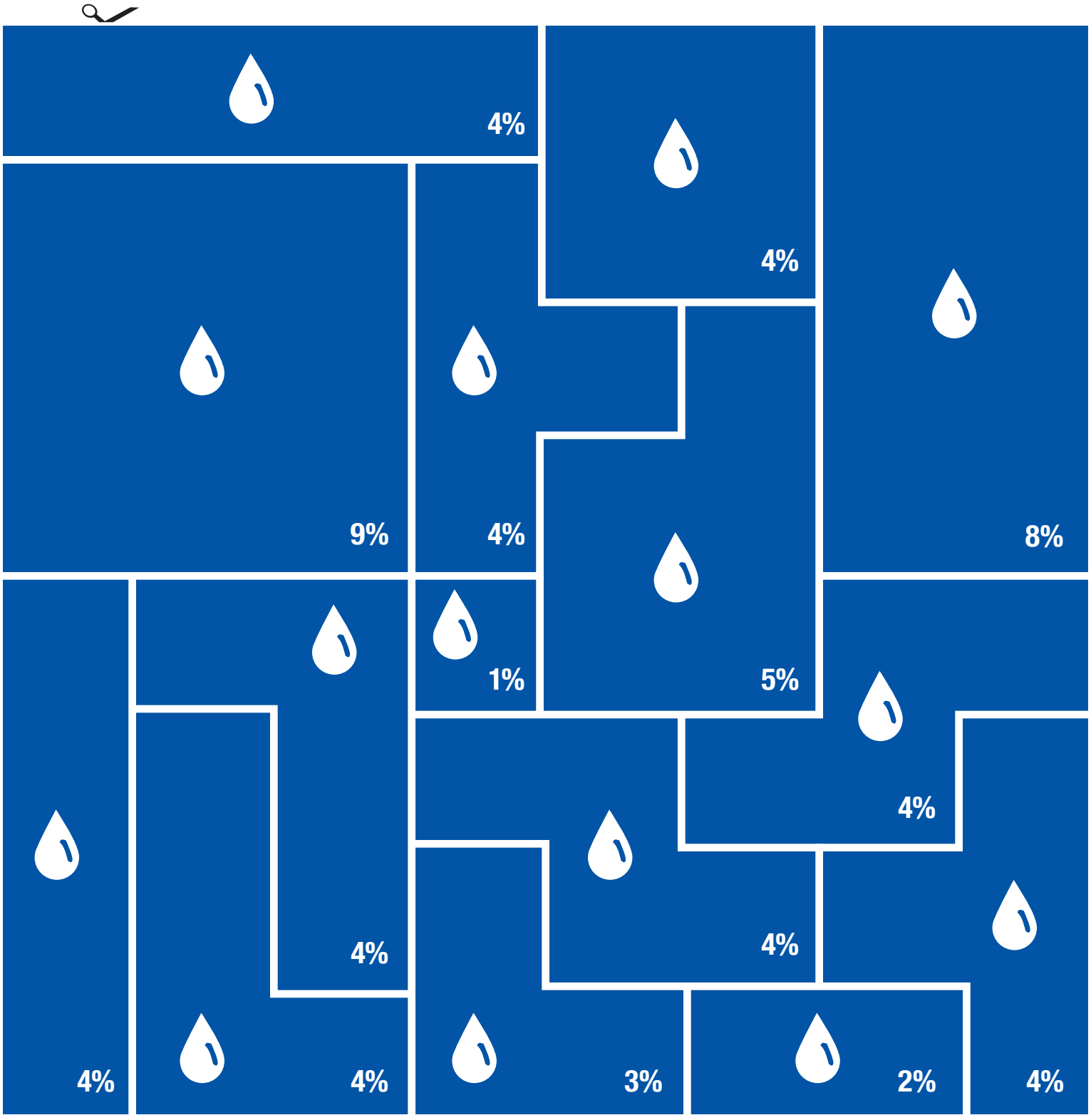

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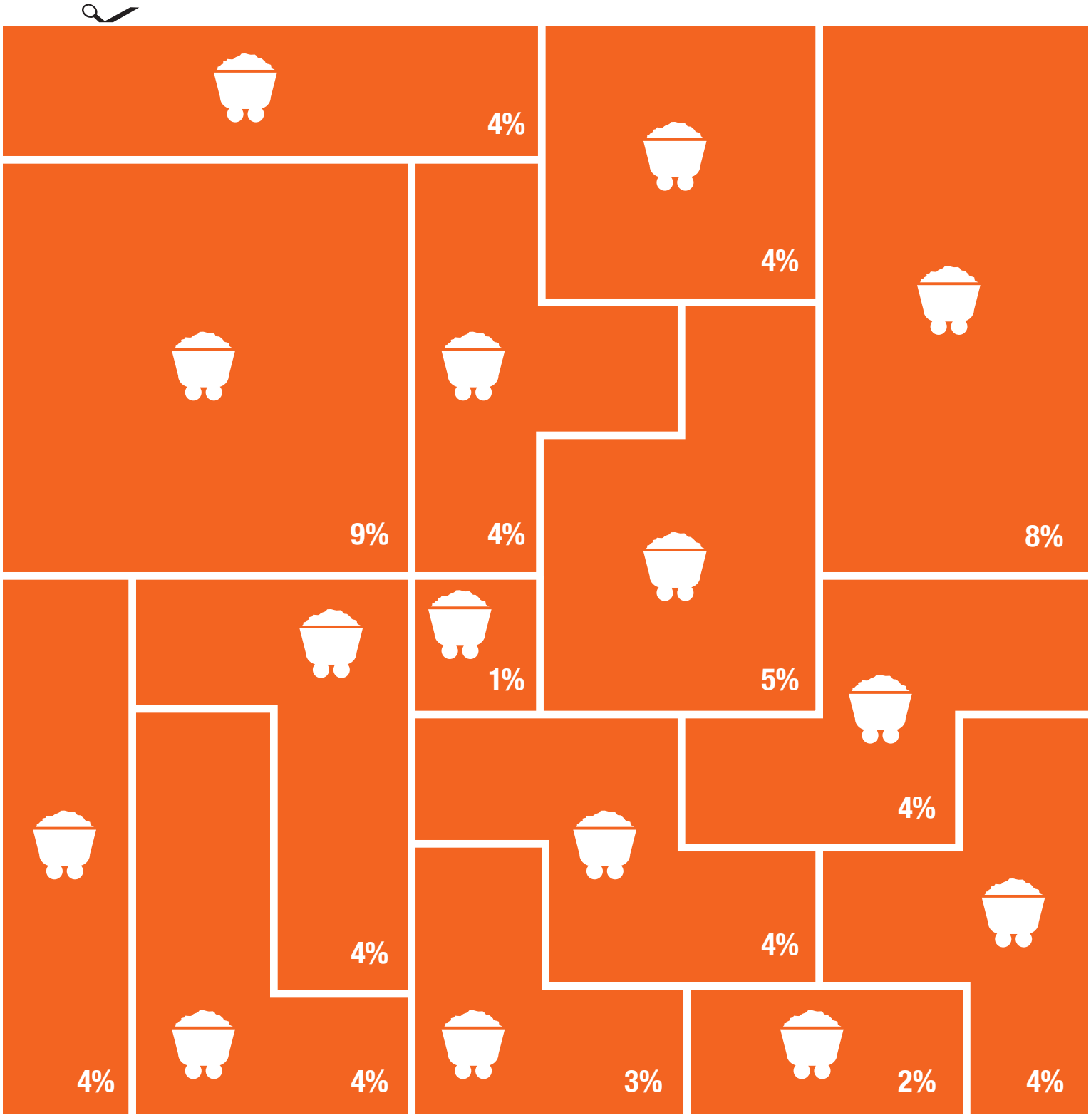

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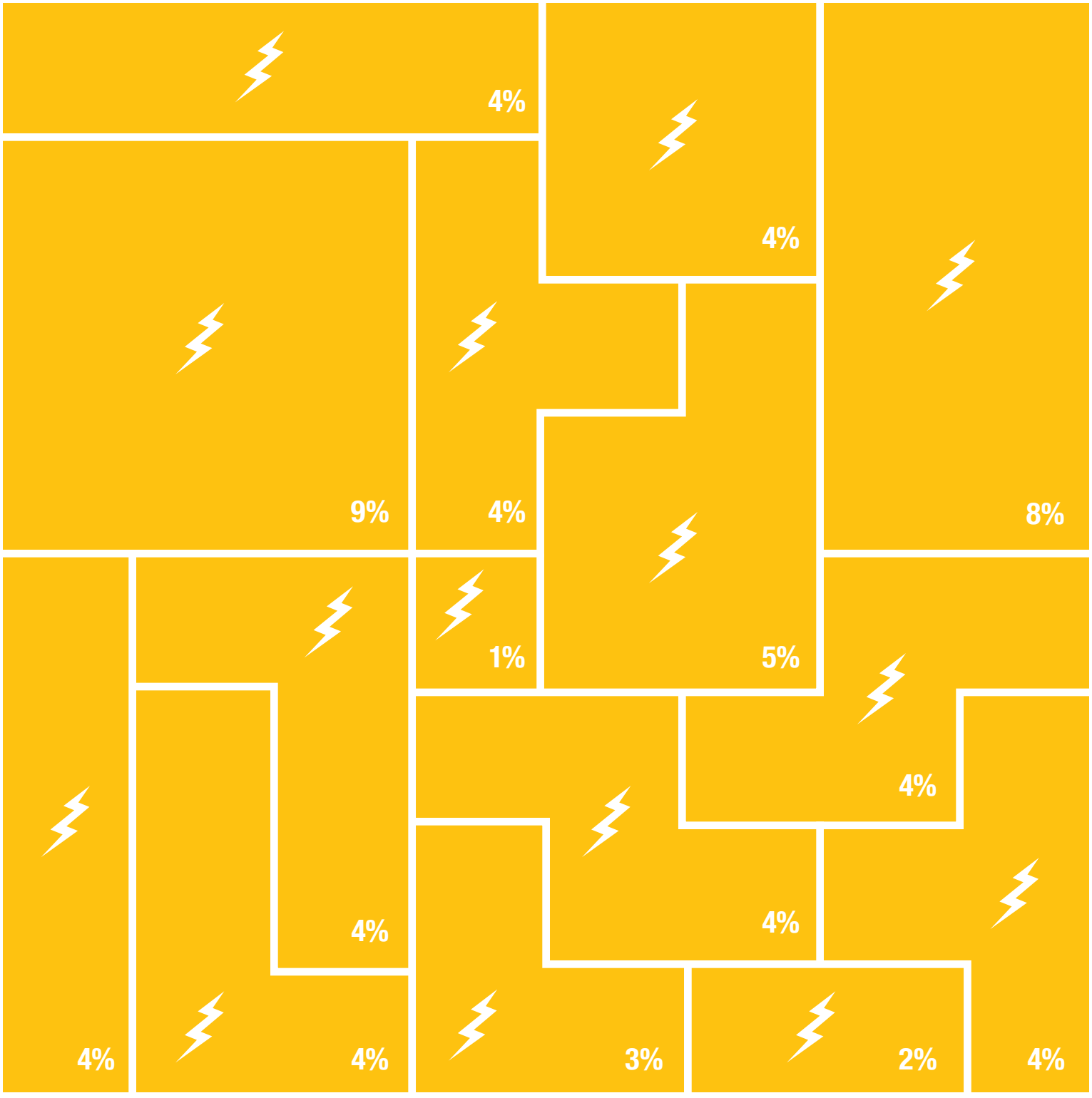

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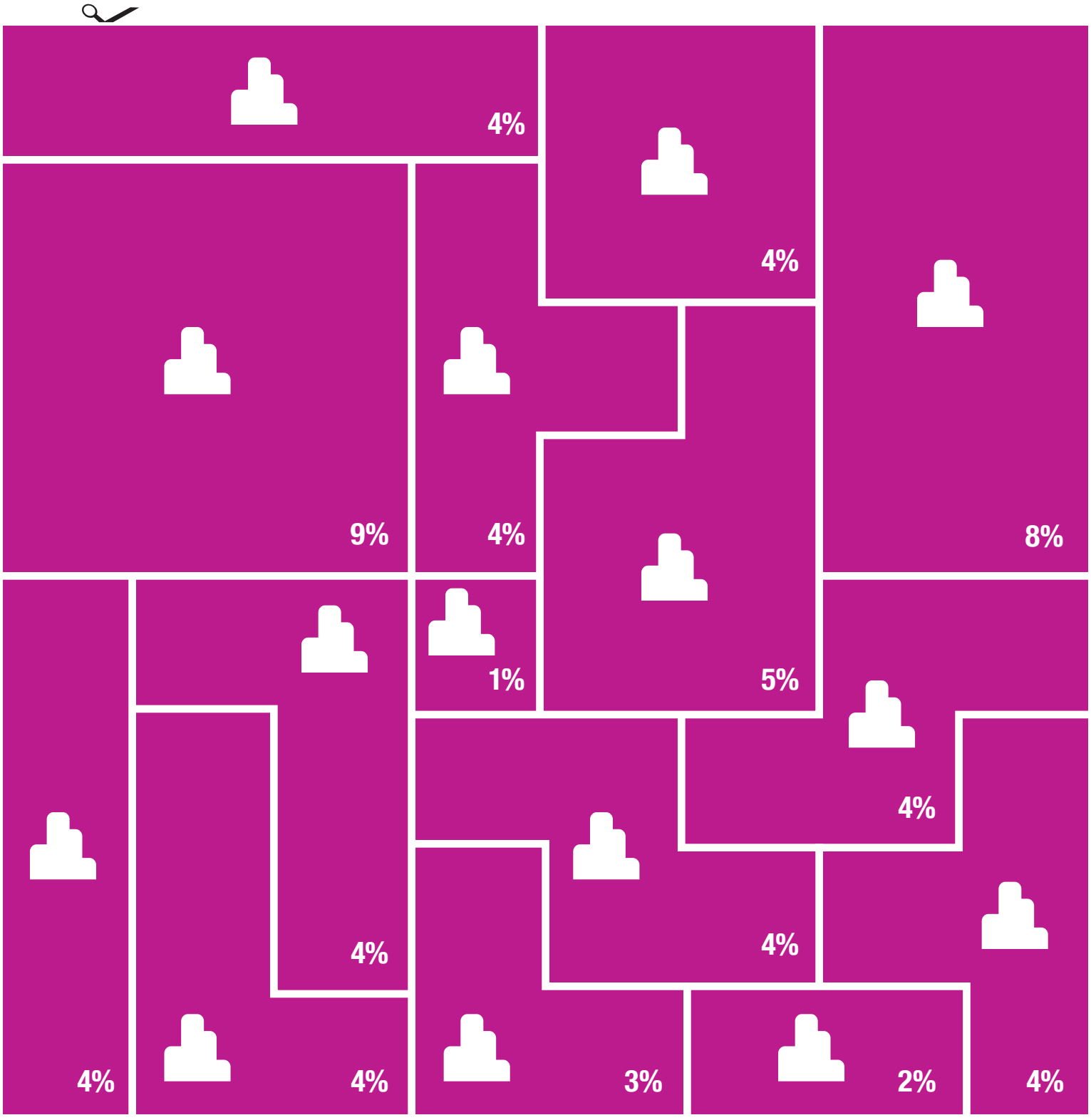

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However, our current maps of the Moon are not very precise. In some areas, near Apollo landing sites, for instance, the locations of craters and ridges are well known. They were extensively photographed by lunar orbiters and Apollo astronauts. But much of the lunar surface is known only approximately.

"If you ask, Where is a crater on the far side of the Moon?, chances are there's probably many kilometers of uncertainty in its true positioning," says David Smith, a scientist at NASA's Goddard Space Flight Center. Even on the near side of the Moon, Smith adds, errors in the true global position of features may be as large as a kilometer.

To improve this situation, NASA plans to send a high-precision laser altimeter to orbit the Moon and create a three-dimensional map of its surface. When completed, the map will be so accurate that we'll know the contours of the Moon better than we do some remote regions on Earth. Astronauts will be able to use it like a USGS hiking map.

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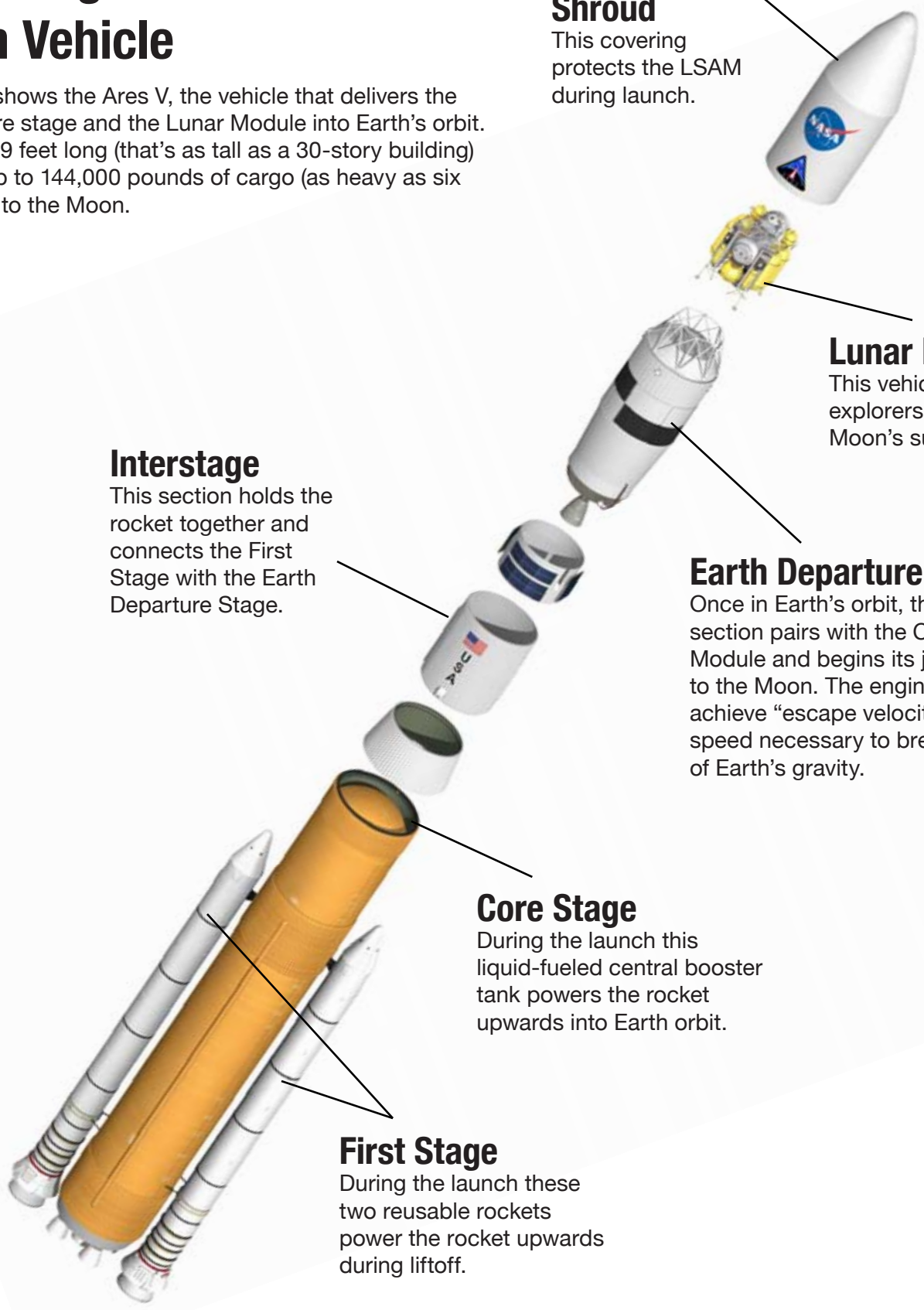

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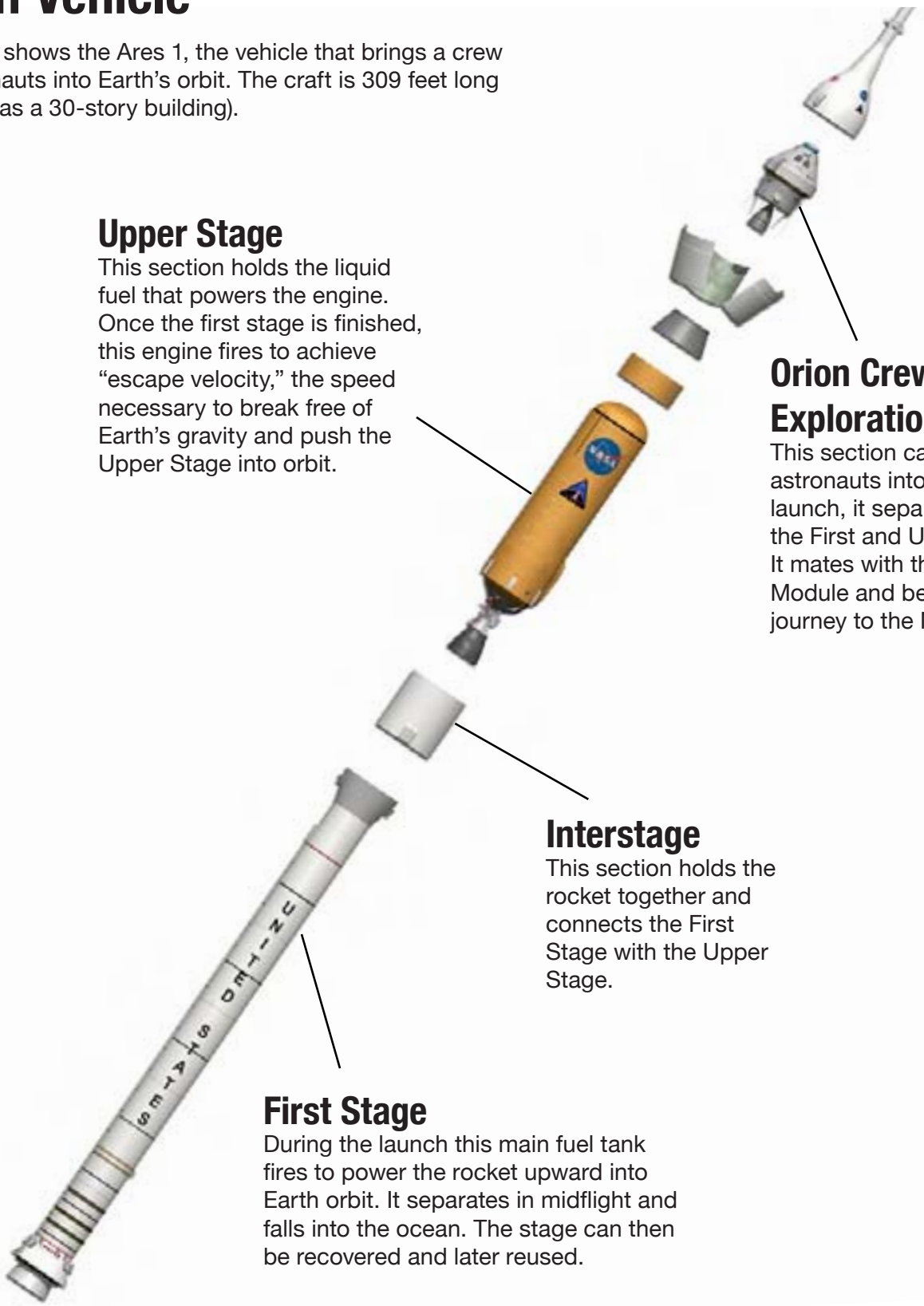

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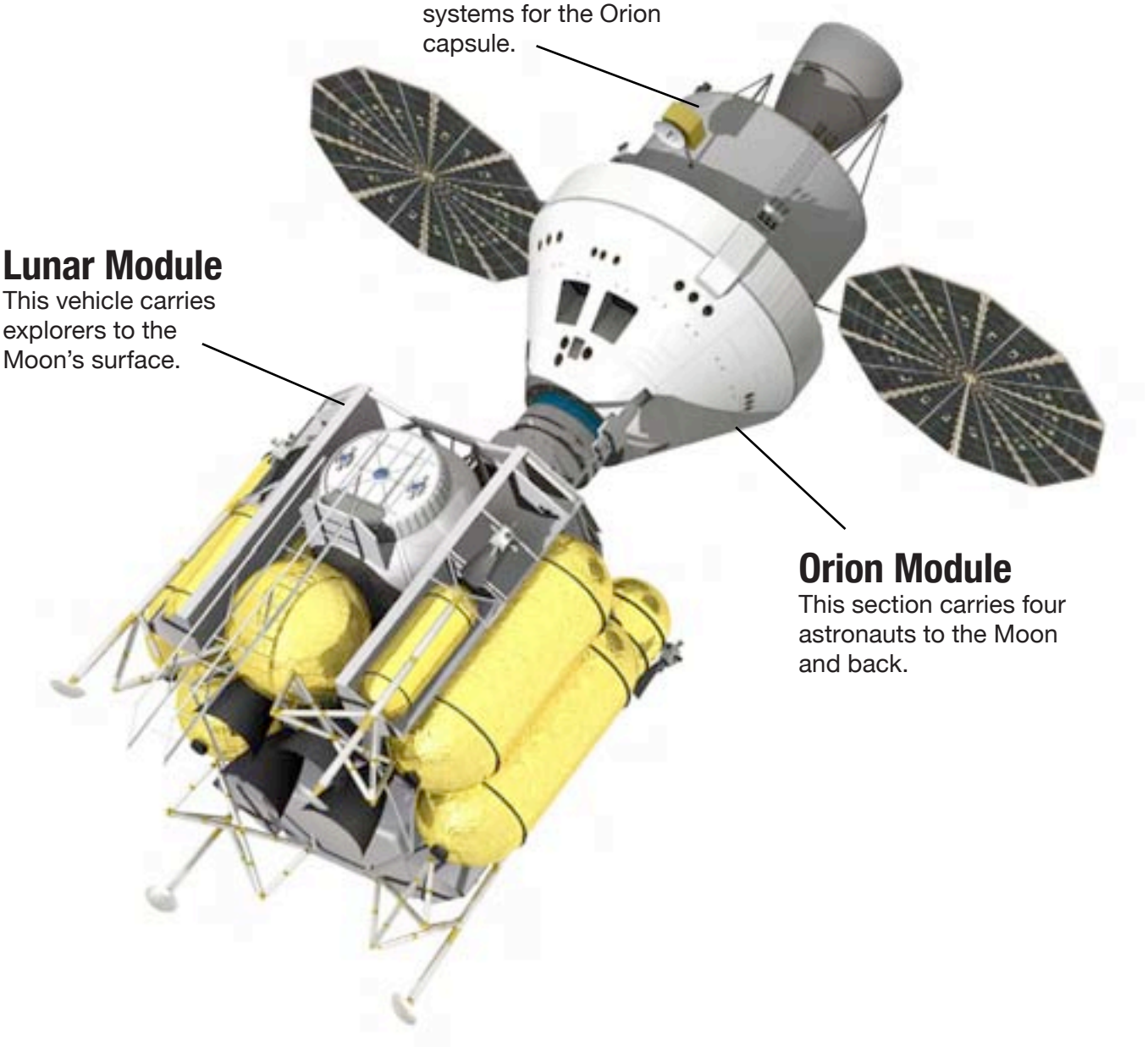

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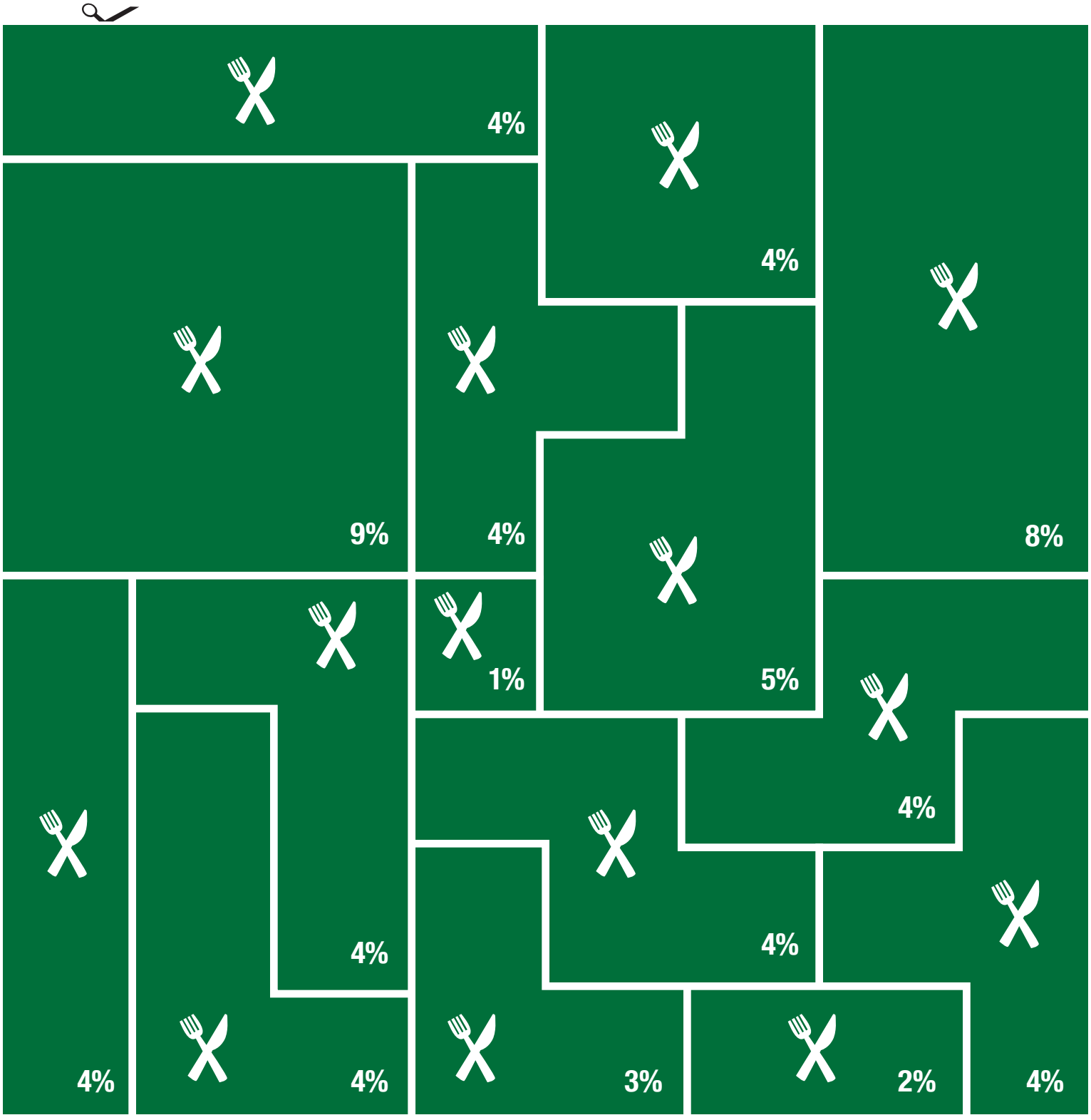

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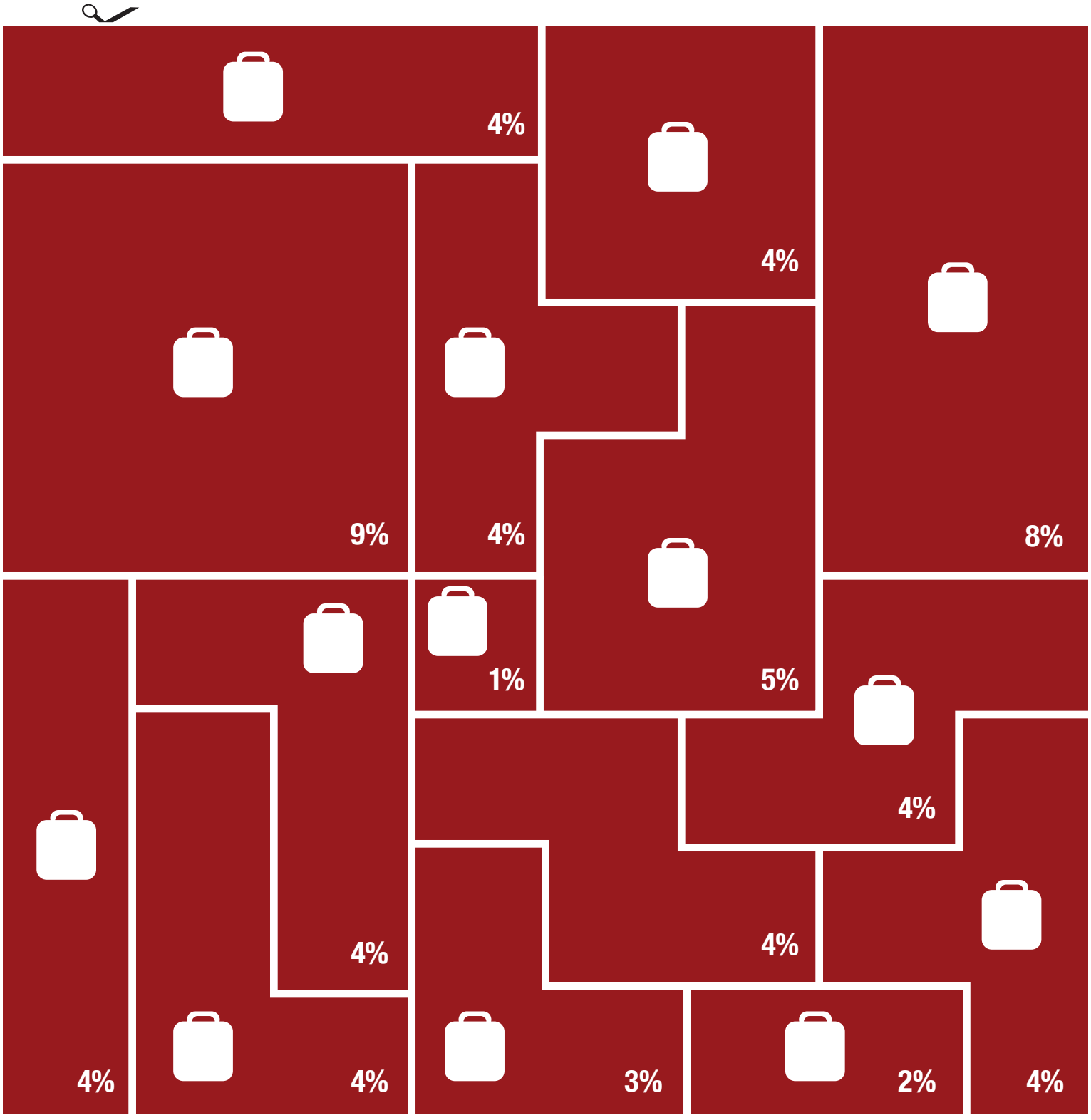

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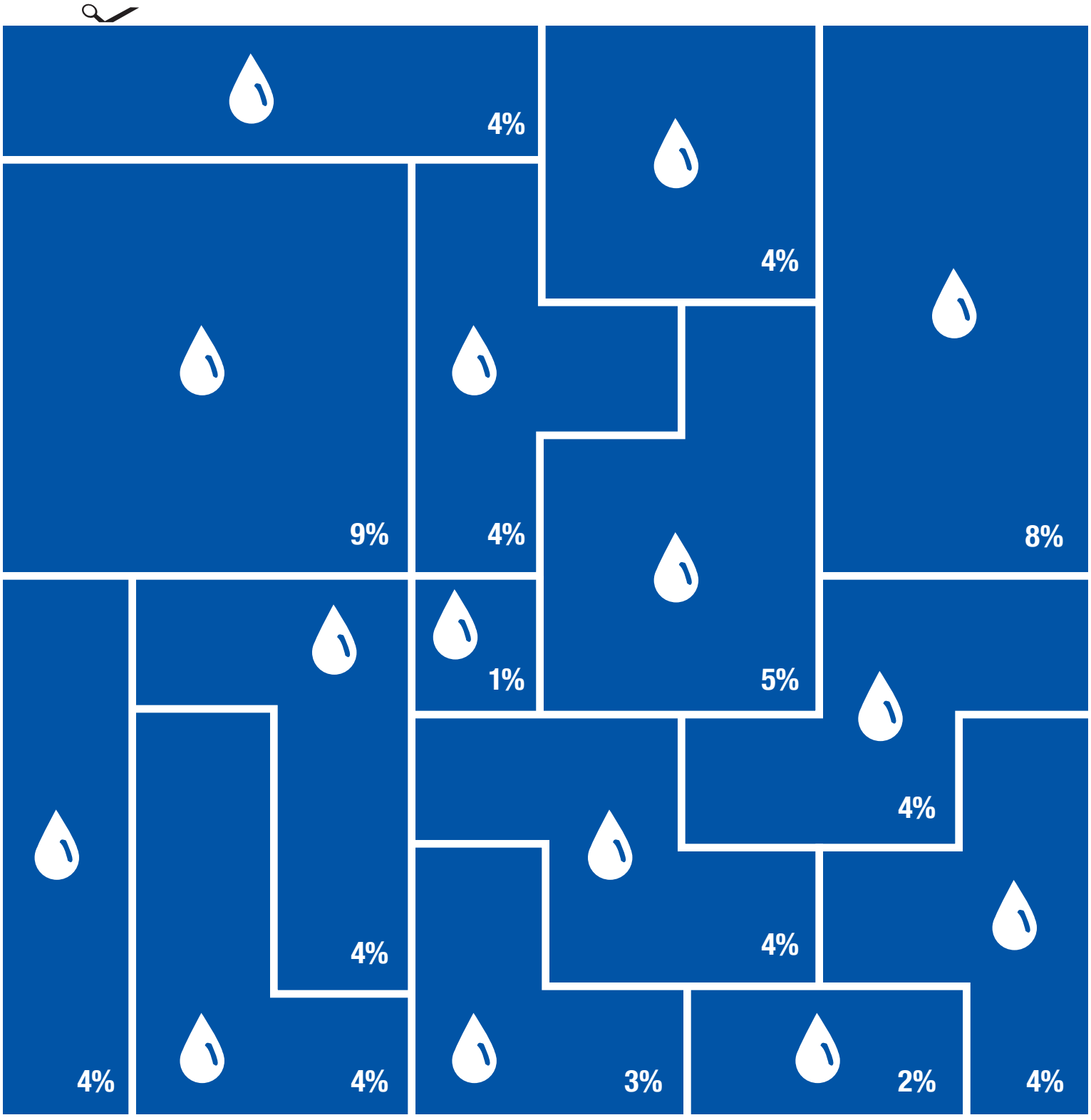

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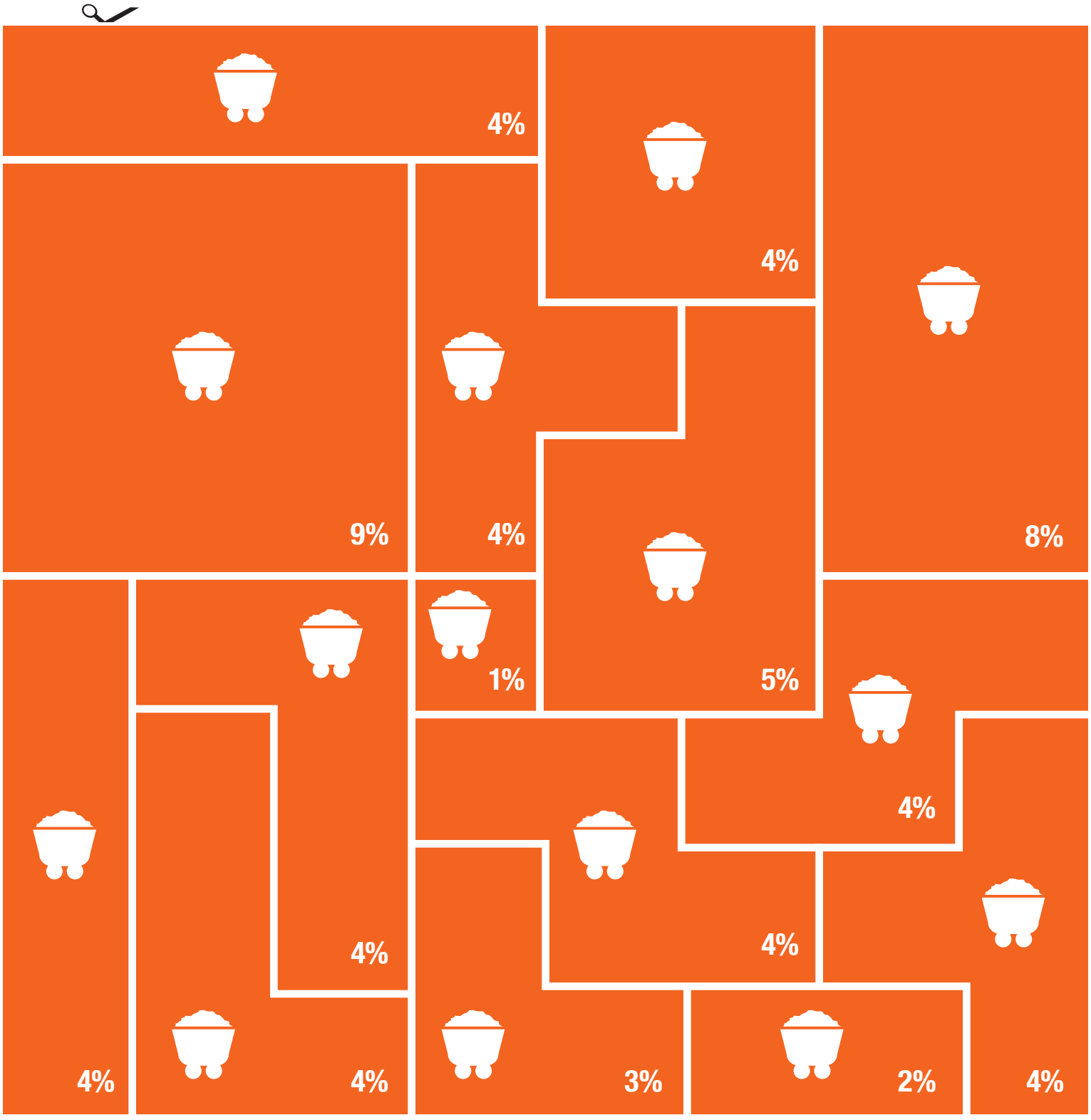

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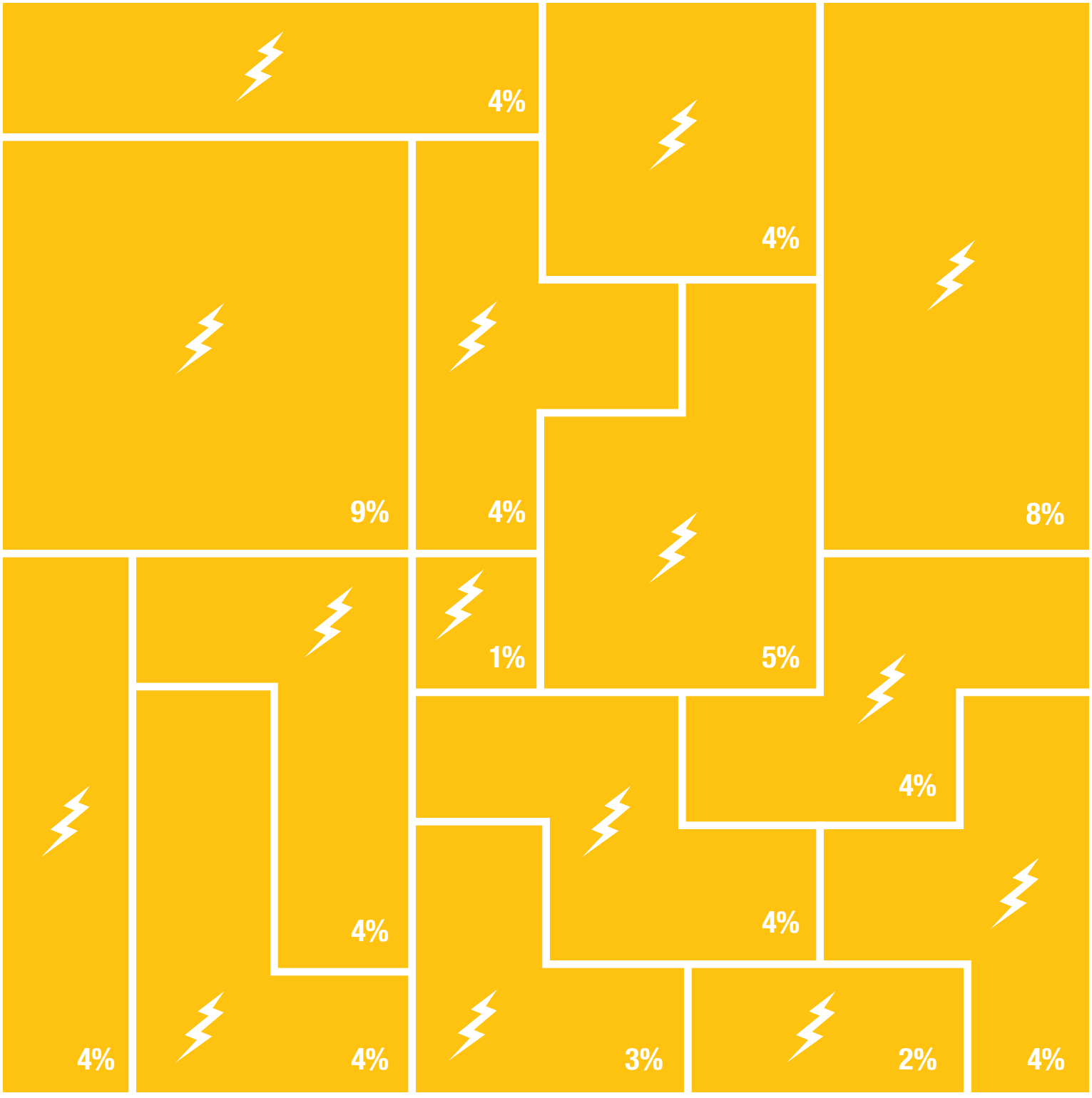

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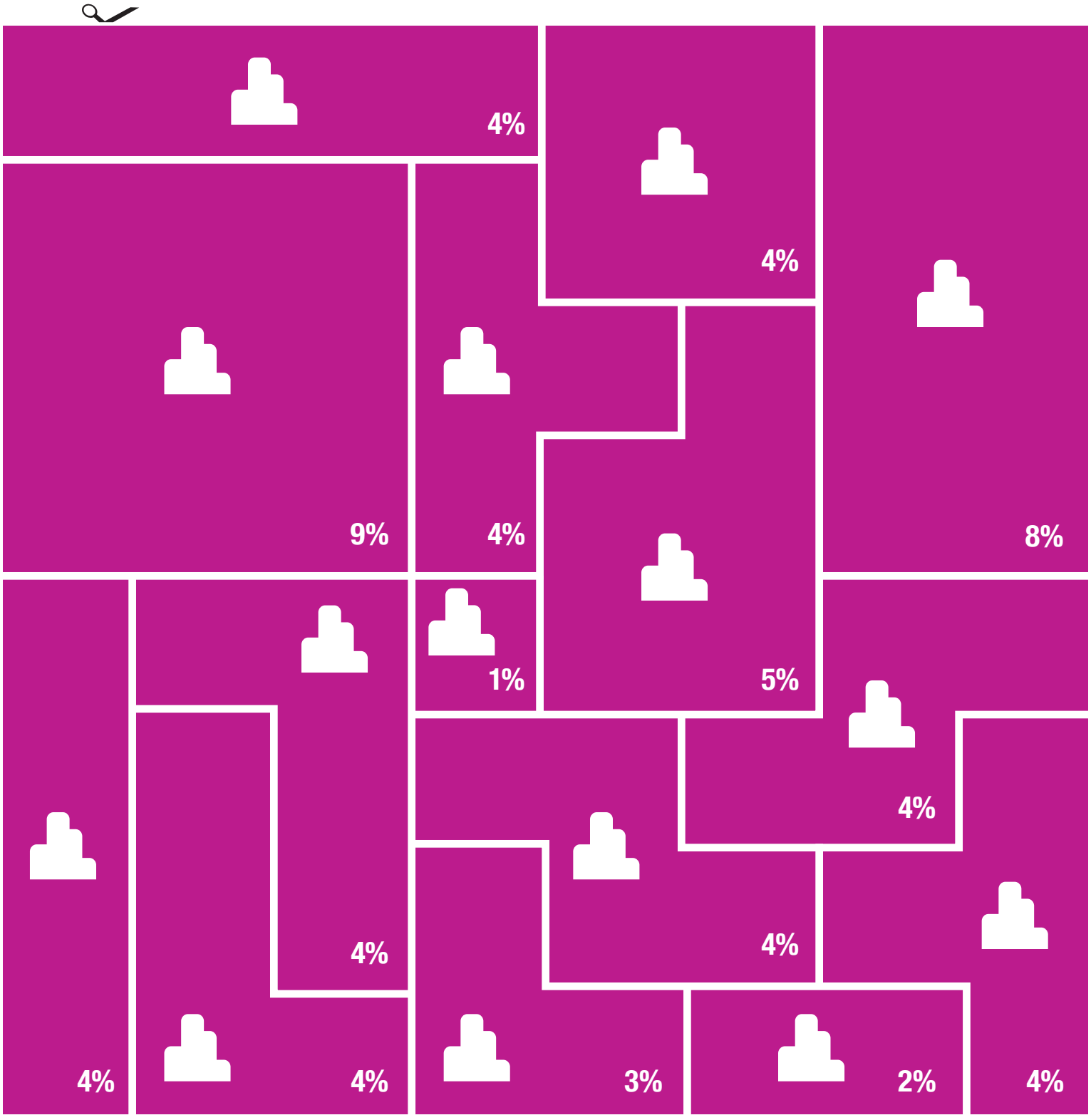

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